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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/912,627	07/24/2001	Veera M. Boddu	6381/27397	5457

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EXAMINER
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MENON, KRISHNAN S

ART UNIT	PAPER NUMBER
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1723

16

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-16

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/912,627	BODDU ET AL.	
	Examiner	Art Unit	
	Krishnan S Menon	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 June 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 8-19,21 and 23-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-19,21 and 23-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                          | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>15</u> . | 6) <input type="checkbox"/> Other: _____                                    |

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## DETAILED ACTION

Claims 8-19, 21, and 23-32 are pending.

### *Priority*

Applicant's arguments re priority under 35 USC 119 (e) with regard to claims 23 and 24, and fig 6 is acknowledged.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 8-13, 19, 23,25,27 and 30-32 are rejected under 35 U.S.C. 102(a/e) as being anticipated by, or, in the alternative, under 35 U.S.C. 103(a) as obvious over, Lihme et al (US 5,935,442).

Lihme (442) teaches a biosorbent composition comprising a support material coated with chitosan for wastewater treatment (col 7 lines 19-55, col 7 line 56-col 8 line 27; col 12 lines 15-37; col 16 lines 8-67; example 1 col 27 lines 13-26) as in instant claim 8,19, 25 and 27; ceramic support material as in instant claim 10, 12 (col 16 lines 8-30), dip coating as in instant claim 11 (example 1 col 27 lines 13-26). The ceramic support material comprises perlite as in instant claim 23 (col 12 lines 30-35).

Chitosan has affinity for heavy metals, cesium, thorium, etc, as in claims 8, 19,32: inherent material property [Where applicant claims a composition in terms of a function, property or

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characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection. "There is nothing inconsistent in concurrent rejections for obviousness under 35 U.S.C. 103 and for anticipation under 35 U.S.C. 102." In *re Best*, 562 F.2d 1252, 1255 n.4, 195 USPQ 430, 433 n.4 (CCPA 1977). This same rationale should also apply to product, apparatus, and process claims claimed in terms of function, property or characteristic. Therefore, a 35 U.S.C. 102/103 rejection is appropriate for these types of claims as well as for composition claims.]

Biosorbent [useful] for removing heavy metals from wastewater as in claims 8,9,19,27,32: intended use [A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)]

Dip coating (claim 11, 12), spin coating (claim 13), coextrusion, etc (claim 30), coated twice (claim 31): product by process "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In *re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). ]

Adhered by ...electrostatic forces, etc. (claim 25): adhesion is by adhesive forces, and the type of force for the adhesion is unrecognizable in the product, and is inherent.[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the

it is not an inherent property to adhere by electrostatic forces is product by nature

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characteristics of his [or her] claimed product. Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. In *re* Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re* Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).]

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
2. Claims 15-18, 21,24,26 and 28 are rejected 35 U.S.C. 103(a) as being unpatentable over Muzzarelli (US 3,635,818) in view of Lihme (442).

Muzzarelli (818) teaches a process for treating aqueous systems containing heavy metals with chitosan (see examples, col 1 lines 54-72, and claims). The system is aqueous waste stream as in claim 18 (col 7 lines 27-29).

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Muzzarelli does not teach chitosan or chitosan gel as being coated on a support (as in claims 15-16, 21,26,28) like ceramic (as in claim 17) or perlite (as in claim 24). Lihme teaches chitosan coated on a ceramic or perlite support (col 16 lines 10-35, col 12 lines 30-35), wherein chitosan is adhered to the surface by non-covalent bonds (col 7 lines 50-55). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Lihme in the teaching of Muzzarelli for obtaining desired floatation/sedimentation properties for chromatographic process and wastewater treatment as taught by Lihme (see abstract and col 12 lines 15-35).

3. Claims 14 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lihme (442) in view of Glasser et al (US 5,900,479).

Lihme (442) teaches all the elements of instant claim 13. Claim 14 adds alumina with oxalic acid used to bind the chitosan to the support. Lihme teaches alumina as support (col 16 line 15-20), but does not teach oxalic acid. Glasser teaches using oxalic acid to have coating of chitosan (abstract, col 4 lines 14, 27-42). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Glasser in the teaching of Lihme to have an effective coating as taught by Glasser (col 1 lines 5-8).

With regard to the ultrafine ceramic alumina as in claim 29, ultrafine alumina is defined as having a particle size from 10-150 microns, and Lihme teaches this (see col 15 lines 5-10).

### *Response to Arguments*

Applicant's arguments filed 6/17/03 have been fully considered but they are not persuasive.

Re the 35 USC 102(b) rejection, examiner agrees that the date of publication of the Lihme ref falls short of the 1 yr statutory period, and therefore, the rejection is corrected to 102(a/e).

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Re the argument that Lihme ref does not teach chitosan as having properties to absorb metals from wastewater: inherency – see the rejection.

Re argument that chitosan is a conglomerating agent which functions as a carrier or support in the Lihme ref: For product claims (claims 8-13, 19, 23,25,27 and 30-32), it does not matter what is the intended function of the product, as long as the structure is the same (While features of an apparatus/product may be recited either structurally or functionally, claims <directed to >an < apparatus/product must be distinguished from the prior art in terms of structure rather than function. >In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); <In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). “[A]pparatus claims cover what a device is, not what a device does.” Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990)

Argument re Lihme's intended use as being for cleaning organic pollutants: again, intended use.

Argument that Lihme does not teach a biosorbent composition: function/intended use.

Argument about Perlite: Lihme teaches using perlite coated with chitosan, which has same structure as that of the applicant. (Applicant also admits, in the amendment submitted on 6/17/03, that perlite is a commonly known support material (2<sup>nd</sup> para under “Priority”))

Argument re Muzzarelli ref is moot due to the new grounds of rejection.

Argument re Lyon ref is also moot due to the new grounds of rejection.

*Conclusion*


Because the Lihme ref was erroneously used in the 35 USC 102 (b) rejection, this office action is being made non-final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 703-305-5999. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Krishnan Menon  
Patent Examiner

  
W. L. WALKER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700